

REMARKS

Claims 1-23 are pending in the present application. In the Office Action mailed September 25, 2006, the Examiner rejected claim 1-3 under 35 U.S.C. §102(b) as being anticipated by Trauernicht et al. (USP 5,650,626). The Examiner next rejected claim 8 under 35 U.S.C. §102(b) as being anticipated by Polichar et al. (USP 5,608,774). Claims 17-19 were rejected under 35 U.S.C. §102(b) as being anticipated by Zarnoch et al. (USP 5,581,592). Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Trauernicht et al. and further in view of Kwasnick et al. (USP 5,303,282). Claims 4 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Trauernicht et al. and further in view of Zarnoch et al. Claims 7 and 9-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Trauernicht et al. and further in view of Polichar et al. Claims 20-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zarnoch et al. and further in view of Polichar et al. Claims 22-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zarnoch et al. and further in view of Polichar et al. and Trauernicht et al.

The Examiner rejected claim 1 under 102(b) as being anticipated by Trauernicht et al. Applicant has elected to amend claim 1 to incorporate the subject matter of claim 4. As amended, claim 1 calls for a radiographic detector panel support that includes a body composed of a composite material sufficient to structurally support components of a radiographic detector and a radiation absorbing material interspersed within the body, wherein the radiation absorbing material has a mass sufficient to prevent detection of radiation reflected off a back cover of the radiographic detector by radiation detecting components of the radiographic detector. Claim 4 has been canceled.

The Examiner rejected the subject matter of original claim 4 under 103(a) over the combination of Trauernicht et al. and Zarnoch et al., stating that “Trauernicht et al. discloses a radiographic detector panel support (20) comprising a body composed of a composite material... and a radiation absorbing material... interspersed within the body.” *Office Action*, September 25, 2006, p. 5. The Examiner also stated that “Zarnoch discloses anti-scatter x-ray device for radiography including detector panel support (substrate) comprising a body composed of a composite material... with a mass sufficient to prevent detection of radiation reflected off a back cover.” *Id.* Applicant believes that the combination of Trauernicht et al. and Zarnoch et al. fails to disclose that which is now called for in claim 1. That is, the cited references fail to teach, disclose, or suggest a radiation absorbing material that has a mass sufficient to prevent detection

of radiation reflected off a back cover of the radiographic detector (i.e., backscatter) by radiation detecting components of the radiographic detector.

Trauernicht et al. discloses an x-ray imaging detector 10 that includes a converter 12 and a plurality of pixels 15 in a detection array 14 mounted to a support unit 20. *Trauernicht et al.*, Col. 4, lns. 4-7; *see also* Fig. 2. The support unit 20 further includes a substrate 22 that can be composed of a variety of materials, including lighter and heavier elements that vary in their amount of x-ray absorption. *Trauernicht et al.*, Col. 5, lns. 40-56. However, substrate 22 is only disclosed as being designed to prevent the generation of secondary x-rays in the material(s) of which substrate 22 is comprised, so as to minimize the effect of those secondary x-rays on the converter 12. That is, substrate 22 limits the generation and effect of secondary x-rays that are produced by interaction between the primary x-rays that impinge thereon and the loosely bound electrons in the substrate material (i.e., Compton Effect/Scattering). There is no teaching or suggestion in Trauernicht et al. of substrate 22 being designed to prevent detection of x-rays by converter 12 created by backscatter that is caused by x-ray radiation reflected off a back surface of the imaging detector 10 (i.e., Classical Scattering). As Trauernicht et al. only discloses a substrate 22 that limits Compton Scattering of secondary x-rays, and not backscatter x-rays, it fails to teach, disclose, or suggest that which is called for in claim 1.

Zarnoch et al. discloses an anti-scatter x-ray grid 10 for use in radiographic imaging that is composed of a substrate 11 that includes absorbing strips 12 therein. *Zarnoch et al.*, Col. 3, lns. 59-64. The substrate 11 is substantially non-absorbent of x-rays and the absorbing strips are substantially absorbent. *Zarnoch et al.*, Col. 4, lns. 26-37 and Col. 5, lns. 27-32. However, anti-scatter x-ray grid 10 is not positioned or designed to prevent backscatter reflected back to a radiographic detector. As shown in Fig. 1 of Zarnoch et al., anti-scatter x-ray grid 10 is positioned above the radiographic detective element (i.e., photosensitive film 8) and between the photosensitive film 8 and the x-ray source/tube 1. As such, it is illogical to suggest that the anti-scatter x-ray grid 10 is in a position to prevent x-rays from being reflected back to the photosensitive film 8 after the x-rays have passed therethrough. As such, Zarnoch et al. also fails to teach, disclose, or suggest that which is called for in claim 1.

The Examiner rejected claim 8 under 102(b) as being anticipated by Polichar et al., stating that the cited reference discloses “a scintillator (42’)...; a detector array (52)...; a control board having a plurality of electronic components (62) to control the detector array during data acquisition and data readout; and a panel support (54) disposed between the detector array and the control board, the panel support at least partially formed of a radiation absorbing material (i.e.

glass or ceramic) (col. 11, lines 27-50 and claim 20).” *Office Action*, supra at 3. Applicant respectfully disagrees. Specifically, Polichar et al. fails to teach or suggest a panel support disposed between a detector array and a control board that is at least partially formed of radiation absorbing material.

Polichar et al. discloses a portable x-ray apparatus that includes an imager 14, which in one embodiment is a flat panel sensor. *Polichar et al.*, Col. 11, ln. 28. The sensor 14 includes a conventional x-ray scintillation screen 42 that is in contact with a TFT photo sensor 52. *Polichar et al.*, Col. 11, lns. 32-35. The TFT photo sensor 52 is made on a glass or ceramic substrate 54 and further includes thin film transistors 60 that hold photodiodes 62 therein. *Polichar et al.*, Col. 11, lns. 35-38. The photodiodes 62 sense and accumulate light flashes produced at corresponding pixels on the scintillation screen 42. *Polichar et al.*, Col. 11, lns. 41-44. There is no teaching or suggestion, however, that substrate 54 is disposed between a detector array and a control board or that the substrate is at least partially formed of radiation absorbing material, as is called for in claim 8. The “electronic components (62)” identified by the Examiner as composing part of a control board are actually the photodiodes (62) included in the photo sensor 52 that detect light from the scintillation screen 42. As the photodiodes 62 make up part of the photo sensor 52, and are not part of a separate “control board” element, it is illogical to suggest that substrate 54 is disposed between the photo sensor 52 and element 62 as is asserted by the Examiner. Element 62, the photodiode, forms part of photo sensor 52, and thus, substrate 54 cannot be positioned between these two elements. As set forth in the present application, the control board/electronics 72 called for in the current claims and set forth in the present invention is not an element that includes any part of the detector array 60 (i.e., the scintillator or photodiode), but is a separate component that includes LEDs, temperature sensors, accelerometers, storage devices, etc., that support the processing and logic control electronics of the detector. *Application*, ¶38. As shown in Fig. 4 of the present application, a panel support 70 is positioned between these two separate structures. The Examiner has not identified a separate control board in Polichar et al. from which photo sensor 52 is separated from by way of substrate 54, as the “electronic components (62)” described by the Examiner are actually photodiodes 62. The Examiner has distorted the disclosure of the cited reference to teach that which is called for in claim 8.

The Examiner also asserted that the substrate 54 is at least partially formed of a radiation absorbing material. Substrate 54 is only described as being composed of “glass or ceramic.” *Polichar et al.*, Col. 11, ln. 36. No further description is provided in the cited reference. While Applicant does not disagree that some specially formed glasses or ceramics may be partially

comprised of a radiation absorbing material, Polichar et al. does not disclose whether the glass or ceramic of substrate 54 is composed as such. Applicant reminds Examiner that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP §2131; citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). The substrate 54 in Polichar et al. is not "expressly or inherently described" as being at least partially formed of a radiation absorbing material. For all these reasons, Applicant believes that claim 8, and the claims dependent therefrom, are patentably distinct over Polichar et al.

The Examiner rejected claim 17 under 102(b) as being anticipated by Zarnoch et al. Claim 17 calls for a method of manufacturing a flat panel x-ray detector including the steps of providing a bulk of non-x-ray absorbing material designed to support internal components of an x-ray detector and wherein the non-x-ray absorbing material is capable of supporting the internal components when a deflective force is applied to the x-ray detector, incorporating x-ray absorbing material into the bulk, and forming an x-ray detector panel support having non-x-ray and x-ray absorbing materials. The Examiner asserted that Zarnoch et al. discloses all the elements of claim 17 and referred to column 4, lines 30-45 in the cited reference for support.

Zarnoch et al. discloses an anti-scatter x-ray grid 10 for use in radiographic imaging that is composed of a substrate 11 that includes absorbing strips 12 therein. *Zarnoch et al.*, Col. 3, lns. 59-64. The substrate 11 is substantially non-absorbent of x-rays and the absorbing strips 12 are substantially absorbent. *Zarnoch et al.*, Col. 4, lns. 26-37 and Col. 5, lns. 27-32. Despite this disclosure, Applicant believes that the cited reference fails to disclose that which is called for in claim 17. First, there is no disclosure that the anti-scatter x-ray grid 10 is included in a flat panel x-ray detector as called for in claim 17. As shown in Fig. 1 of Zarnoch, the radiographic imaging arrangement therein includes only an x-ray tube 1, anti-scatter x-ray grid 10, and a combination of photosensitive film 8 and intensifying screens 9 for receiving the x-rays attenuated by body 3. *Zarnoch et al.*, Col. 3, lns. 46-58. This combination of elements is commonly employed in traditional radiography to produce a resulting black and white image. That is, flat panel x-ray detectors as called for in claim 17 would not include photosensitive film 8 and intensifying screens 9.

Furthermore, there is no teaching or suggestion in Zarnoch et al. that the anti-scatter x-ray grid 10 is a panel support designed to support internal components of an x-ray detector and support the internal components when a deflective force is applied to the x-ray detector as called for in claim 17. In fact, Zarnoch et al. discloses that x-ray grids as the one described therein are

“fragile” and typically require special handling just to withstand machining and handling thereof. *Zarnoch et al.*, Col. 2, lns. 17-21. A reading of the cited reference makes it clear that anti-scatter x-ray grid 10 is not designed as a panel support that is capable of supporting components of an x-ray detector or of withstanding deflective forces applied to the x-ray detector. In fact, an arrangement as shown in Fig. 1 of *Zarnoch et al.* would not even include an x-ray detector as used in a flat panel x-ray detector as set forth in the present invention. For all these reasons, Applicant believes that claim 17, and the claims dependent therefrom, are patentably distinct over *Zarnoch et al.*

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-3 and 5-23.

Applicant appreciates the Examiner’s consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

/Kevin R. Rosin/

Kevin R. Rosin
Registration No. 55,584
Phone 262-268-8100 ext. 15
krr@zpspatents.com

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P.O. ADDRESS:

Ziolkowski Patent Solutions Group, SC
136 South Wisconsin Street
Port Washington, WI 53074
262-268-8100